

REMARKS

Claims 1, 2, 5, 6, 8 and 10-34 are pending. The above amendments are presented in the format described by the proposed revision to 37 CFR § 1.121, and as such, no clean copy of the amended claims is being provided.

I. New Claims/Claim Amendments

Claims 3, 4, 7 and 9 have been cancelled without prejudice or disclaimer. Claims 1, 3 and 5 are combined. Claims 10 and 11 were amended as supported by page 9, last paragraph and page 10, first paragraph. Claims 20-34 have been added to further define the present invention. Claims 20-26 correspond to Claims 2, 6, 7, 13, 14, 15 and 17. Claims 27 and 28 are supported at page 4, line 2. Support for new claims 29 and 30 can be found in the present specification at page 9, lines 6-7. Claims 31 and 33 are supported by original Claims 1 and 5. Claims 32 and 34 are supported as are Claims 27 and 28.

II. 35 USC § 112

Claims 5, 16 and 19 stand rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim that which is considered the invention. In response, Claim 5 has been amended to remove any lack of antecedent basis.

III. 35 USC § 103

Claims 1-19 stand rejected under 35 USC § 103 as being unpatentable over EP 799,900 in view of Sale et al. (U.S. Patent No. 3,685,229) and/or Murtha (U.S. Patent No. 5,496,426) and optionally "Metals Handbook Desk Edition" pp. 445, 450. The Office Action asserts that EP '900 discloses each feature of the rejected claims, except for (a) the PS/UTS ratio in the H or O temper of the alloy and (b) the recited alloy being corrugated and secured to a parallel plate or sheet, for which purpose Sale et al. and Murtha are cited.

It is respectfully submitted that the present invention recognizes that its alloys, even if some overlap elemental ranges of EP '900, unexpectedly have a favorable combination of

characteristics, namely, roll-formable, sufficiently high strength, good corrosion resistance and good weldability, allowing the construction of a composite panel joined by welding which unexpectedly can withstand a severe marine environment. Page 5 of the specification states Zn up to 1.2% improves corrosion resistance. Claims 1 and 5 now recite this Zn level. EP '900, alone, provides no motivation to corrugate the alloy and secure it to a parallel plate or sheet. There is no motivation from the secondary references to select the alloy of EP '900 as the alloy for their structures.

A. Sale et al.

The Office Action asserts that Sale et al. "teaches corrugated structures made from weldable and formable aluminum alloys (column 4 lines 8, 16, 20, etc.) used for structure applications. The corrugated lattice can be placed between two parallel plates of the same composition and welded (abstract, see Figures, column 4, lines 14-15)".

Column 4 mentions various techniques, including welding, to secure the skin to the base sheet, but folding is preferred. (See column 8, line 12). However, Applicants respectfully submit that while Sale et al. may teach a reinforced structural element comprising a corrugated aluminium stiffener sheet, the structural element of Sale et al. does not resemble the composite aluminium panel of the present invention. Specifically, the composite panel of the present claims includes parallel plates or sheets on either side of the corrugated aluminium stiffener sheet. See Figs. 2a-2c of the present application. In contrast, the only three-sheet structural element of Sale et al. includes two corrugated aluminium sheets 14, 20 sandwiching a base sheet 12. Thus, even if Sale et al. were to teach that corrugated structures can be made by joining corrugated sheets to planar sheets, the corrugated structures of Sale et al. are not described as two parallel plates and/or sheets secured to the peaks and troughs of a corrugated aluminium stiffener sheet by means of welding between the parallel plates and/or sheets, as recited by present claims. For example, column 6, lines 1-7, describes Fig. 7 and fails to teach reinforcing plate 54 is welded to the corrugated sheet.

Additionally, the technical field of this reference is different than that of the presently recited alloy. Sale et al. discloses a structure used to form built-up panel units to form

lightweight modules to build works like sheds, and airplane hangars (see column 1, lines 10-12, and column 1, line 65 to column 2, line 10). In contrast, the alloy of the present invention provides a composite panel which is joined by means of welding thereby exploiting the good welding characteristics of the stiffener sheet and the good corrosion performance, in particular when having a Zn-content of more than 0.4% as currently claimed. Thus, the resulting composite panel can be used in a marine environment, such use being very demanding on strength and corrosion performance of the welded panel. Such characteristics are not at all apparent from the teachings of Sale et al. (or any other cited reference), other than in hindsight, that the disclosed product of Sale et al. typically being used for hangars and the like, can withstand the severe circumstances of a marine environment. Claims 35 and 36 recite use in a marine environment.

Furthermore, Sale et al. does not disclose any specific composition of aluminium alloys, other than a general mention that aluminium would be a suitable material as a selection from a wide range of possible materials (column 4, lines 7-8).

B. Murtha

Murtha discloses an aluminium alloy having Zn in a range of 7.6-8.4% and Mg in a range of 1.8-2.2% (see, e.g., the Abstract and claim 1). Such an alloy composition results in that the disclosed alloy falls within the AA7xxx-series alloy. In contrast, the alloy of the present claims, includes an alloy from the AA5xxx-series alloys. The alloy disclosed by Murtha has a composition far removed from the presently claimed alloy.

Furthermore, the alloy disclosed by Murtha can be subjected to roll-forming operations (see, e.g., the abstract and column 2, line 65-66). The resulting product is used for structural section airframe members, such as stringers and frames (see column 1, line 15-17). There is no disclosure or suggestion by Murtha that the roll-formed alloy products can be used in composite panels of the particularly claimed configuration, neither is there a disclosure by Murtha that the roll-formed alloy products can be used in panels joined to each other by means of welding. This cannot come as a surprise to the skilled person since it is known in the art that AA7xxx-series

alloys have very poor welding characteristics, whereas the present alloy provides excellent welding characteristics.

Thus in summary, Murtha discloses an alloy having a composition very far removed from the presently recited alloy. Furthermore, Murtha does not disclose nor suggest that the alloy can be welded into a composite panel of any configuration, and the alloy of Murtha is used in a completely different field, namely aerospace, in contrast to marine structures are recited by the present claims. As a result, there is no motivation in either documents (EP'900 and Murtha) to combine the teaching of these documents, other than from impermissible hindsight analysis, and even if the teaching of these two documents could be combined, it does not result into the presently claimed composite panel.

C. Metals Handbook

Applicants respectfully submit that the Metals Handbook reference does not cure the deficiencies discussed above.

It is regarded to be the inventive merit of the inventors for the current invention to recognize that the alloy disclosed in EP'900, including a somewhat wider range, has a favorable combination of characteristics, namely being roll-formable, sufficiently high strength, good corrosion resistance, and good welding characteristics, allowing the construction of a composite panel joined by means of welding, in particular by means of laser welding techniques, which composite panel can be subjected to a severe marine environment. There is no suggestion in any of the cited references to combine the teaching of these documents, other than in an unallowable hindsight analysis.

Thus, Applicants respectfully submit that the cited combination of references fails to teach each feature of the pending claims, and as such, no prima facie obviousness has been established.

IV. Conclusion

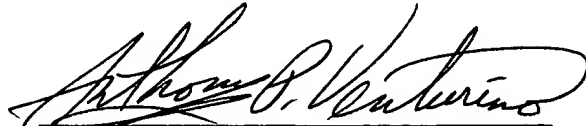
In view of the above, it is respectfully submitted that all objections and rejections are overcome. Thus, a Notice of Allowance is respectfully requested.

Respectfully submitted,

Date:

March 25, 2003

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